

## *Pandalus borealis* (Northern Shrimp)

### Priority 1 Species of Greatest Conservation Need (SGCN)

**Class:** *Malacostraca* (Crustaceans)  
**Order:** *Decapoda* (Decapods)  
**Family:** *Pandalidae* (Pandalid Shrimps)

#### General comments:

General information:

<http://www.asmfcr.org/species/northern-shrimp>

<http://www.maine.gov/dmr/rm/shrimp/index.htm>

#### No Species Conservation Range Maps Available for Northern Shrimp

#### SGCN Priority Ranking - Designation Criteria:

**Risk of Extirpation: NA**

**State Special Concern or NMFS Species of Concern: NA**

**Recent Significant Declines:**

Northern Shrimp is currently undergoing steep population declines, which has already led to, or if unchecked is likely to lead to, local extinction and/or range contraction.

Notes:

Recent Declines:

<http://www.asmfcr.org/uploads/file/528fa8f12013Northern>

**Regional Endemic:**

*Pandalus borealis*'s global geographic range is at least 90% contained within the area defined by USFWS Region 5, the Canadian Maritime Provinces, and southeastern Quebec (south of the St. Lawrence River).

Notes:

Recent Declines:

<http://www.asmfcr.org/uploads/file/528fa8f12013Northern>

**High Regional Conservation Priority:**

**Atlantic States Marine Fisheries Commission Stock Assessments:**

Status: Decreasing, Status Comment: Given the current condition of the resource (collapsed, overfished, and overfishing occurring) and poor prospects for the near future, the NSTC recommends that the Section implement a moratorium on fishing in 2014.

Reference:

<http://www.asmfcr.org/uploads/file/528fa8f12013NorthernShrimpAssessment.pdf>

High regional conserv

**High Climate Change Vulnerability: NA**

**Understudied rare taxa: NA**

**Historical: NA**

**Culturally Significant: NA**

#### Habitats Assigned to Northern Shrimp:

Formation Name	Subtidal
Macrogroup Name	Subtidal Mud Bottom
<b>Habitat System Name:</b> Unvegetated <b>**Primary Habitat**</b> <b>Notes:</b> offshore deep mud basins, primary for adult, adult spawning, and juvenile, egg-bearing females aggregate/feed nearshore; near mouths of estuaries; eggs hatch, juvenile feeding habitat; nearshore and offshore, adult transitional phase, male and spent female feeding habitat offshore	

***Pandalus borealis* (Northern Shrimp)****Priority 1 Species of Greatest Conservation Need (SGCN)****Class:** *Malacostraca* (Crustaceans)**Order:** *Decapoda* (Decapods)**Family:** *Pandalidae* (Pandalid Shrimps)**Formation Name Subtidal****Macrogroup Name Subtidal Pelagic (Water Column)****Habitat System Name:** Nearshore **\*\*Primary Habitat\*\*** **Notes:** larval, juvenile, adult, spent female feeding habitat**Habitat System Name:** Offshore **\*\*Primary Habitat\*\*** **Notes:** primary for larval, also used by juvenile, adult**Stressors Assigned to Northern Shrimp:**

Stressor Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

**IUCN Level 1 Threat Biological Resource Use****IUCN Level 2 Threat:** Fishing and Harvesting of Aquatic Resources**Severity:** Moderate Severity **Actionability:** Highly actionable**Notes:** Recent (2010-2012) state-wide catch levels have been higher than those recommended by ASMFC scientists. Regulations have been implemented to close fisheries (in 2014 and 2015). The fishing effect is difficult to measure because of other stressors, but in past years, the likelihood of over-fishing impacting the stock was likely; certainty was moderate; and the spatial extent was pervasive (state-wide (coastal)).**IUCN Level 1 Threat Pollution****IUCN Level 2 Threat:** Agricultural and Forestry Effluents**Severity:** Severe **Actionability:** Moderately actionable**Notes:** Crustacean larvae and adults are exceptionally sensitive to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutics), and/or sediments.**IUCN Level 2 Threat:** Domestic and Urban Waste Water**Severity:** Severe **Actionability:** Moderately actionable**Notes:** Crustacean larvae and adults are exceptionally sensitive to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutics), and/or sediments.**IUCN Level 1 Threat Climate Change and Severe Weather****IUCN Level 2 Threat:** Habitat Shifting or Alteration**Severity:** Severe **Actionability:** Actionable with difficulty**Notes:** Northern shrimp are an arctic/sub-arctic species in the southernmost extent of their range in the Gulf of Maine, and have been highly sensitive to warming conditions. The likelihood of this impact is likely and may be occurring (high); certainty is high; and the spatial extent is pervasive (state-wide (coastal)).**IUCN Level 2 Threat:** Temperature Extremes**Severity:** Severe **Actionability:** Actionable with difficulty**Notes:** Northern shrimp are an arctic/sub-arctic species in the southernmost extent of their range in the Gulf of Maine, and have been highly sensitive to warming conditions. The likelihood of this impact is likely and may be occurring (high); certainty is high; and the spatial extent is pervasive (state-wide (coastal)).**IUCN Level 1 Threat Invasive and Other Problematic Species, Genes and Diseases****IUCN Level 2 Threat:** Invasive Non-native-Alien Species-Diseases**Severity:** Moderate Severity **Actionability:** Actionable with difficulty**Notes:** Invasives could have effects largely unknown at this time. Likelihood is high and large scale (throughout the region), so actionability is low.

***Pandalus borealis* (Northern Shrimp)****Priority 1 Species of Greatest Conservation Need (SGCN)****Class:** *Malacostraca* (Crustaceans)**Order:** *Decapoda* (Decapods)**Family:** *Pandalidae* (Pandalid Shrimps)**Species Level Conservation Actions Assigned to Northern Shrimp:**

*\*Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are summarized here.*

<b>Conservation Action</b>	<b>Category:</b> Survey and Monitoring	<b>Biological Priority:</b> critical	<b>Type:</b> on-going
Monitor stock status through surveys and sampling programs			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> new
Conduct research to support stock assessment and population dynamics modeling			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Determine the relative roles of natural predation, fishing mortality, and climate change in stock dynamics			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Public Outreach	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Design and encourage the use of more size-selective fishing gear			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

**Conservation Actions Associated with the Shrimp Guild:**

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Develop molecular tools to identify where specimens are collected.			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Survey and Monitoring	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently			

**Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Policy	<b>Biological Priority:</b> critical	<b>Type:</b> on-going
Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.			

**Stressor(s) Addressed By This Conservation Action**

Agricultural and Forestry Effluents

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Expand existing education and research among researchers and managers to improve understanding and close data loopholes in order to inform management			

***Pandalus borealis* (Northern Shrimp)**  
**Priority 1 Species of Greatest Conservation Need (SGCN)**

**Class:** *Malacostraca* (Crustaceans)

**Order:** *Decapoda* (Decapods)

**Family:** *Pandalidae* (Pandalid Shrimps)

**Stressor(s) Addressed By This Conservation Action**

Domestic and Urban Waste Water

**Broad Taxonomic Group Conservation Actions:**

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

**Habitat Based Conservation Actions:**

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

*The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.*